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10/066,843	02/04/2002	Hong Shi	BP 2141	5155

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Bruce E. Garlick
P.O. Box 160727
Austin, TX 78716-0727

EXAMINER	
LE, DUY K	

ART UNIT	PAPER NUMBER
2685	

DATE MAILED: 08/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/066,843	SHI ET AL.	
	Examiner	Art Unit	
	Duy K Le	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-25 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,4-11,13-20 and 22-25 is/are rejected.

7)☒ Claim(s) 2,3,12 and 21 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 5, 7, 9, 11, 14, 16, 18, 20, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Walczak et al. (U.S. Patent 5,193,223).

As to claim 1, Figure 4 in Walczak shows a Radio Frequency (RF) transmitter (see Col. 6, lines 40-42) comprising:

an Intermediate Frequency (IF) modulator (402) that receives a modulated baseband signal and that produces a modulated IF signal having a non-constant envelope (see Col. 7, lines 5-7);

a translational loop (412, 104, 108, 109) that receives the modulated IF signal and that produces a modulated RF signal having a constant envelope (see Col. 4, line 62 to Col. 5, line 7 and Col. 6, lines 62-67);

an envelope time delay adjust block (426, 428, 424) that receives an envelope signal corresponding to the modulated IF signal and that produces a time delayed envelope signal based upon a time delay control signal (see Col. 6, lines 44-56. The time delay control signal comes from block 422);

an envelope adjust block (104, 108) that adjusts the modulated RF signal based upon the time delayed envelope signal to produce an envelope adjusted modulated RF signal (see Col. 6,

lines 62-67. The gain of variable gain stage 104 is adjusted by amplifier 424 and the mixer 108 produces an adjusted modulated RF signal); and

a time delay calibration block (422) that receives the envelope adjusted modulated RF signal and that produces the time delay control signal (see Col. 6, lines 57-62).

As to claims 5 and 14, the Walczak reference further discloses an envelope detection block that produces the envelope signal (detector 426 as "an envelope detection block" in Figure 4 and Col. 6, lines 44-47).

As to claims 7, 16, and 24, the Walczak reference further discloses the envelope detection block determines the envelope signal based upon the modulated IF signal (see Col. 6, lines 44-47 and Figure 4).

As to claims 9 and 18, the Walczak reference further discloses the envelope signal is a digital signal (see Col. 6, lines 44-50); and the time delayed envelope signal is an analog signal (see Col. 6, lines 53-67).

As to claim 11, Figure 6 in Walczak discloses a wireless device (600) comprising:

a case (see Col. 2, lines 33-37. It is inherent a cellular telephone has a case);

an antenna (620) coupled to the case (see Col. 2, lines 42-45);

a baseband processor (614) disposed within the case (see Col. 2, lines 51-54);

a Radio Frequency (RF) unit (604) disposed within the case, coupled to the baseband processor, coupled to the antenna and having an RF transmitter comprising:

an Intermediate Frequency (IF) modulator (402) that receives a modulated baseband signal and that produces a modulated IF signal having a non-constant envelope (see Col. 7, lines 5-7 and Figure 4);

a translational loop (412, 104, 108, 109) that receives the modulated IF signal and that produces a modulated RF signal having a constant envelope (see Col. 4, line 62 to Col. 5, line 7, Col. 6, lines 62-67, and Figure 4);

an envelope time delay adjust block (426, 428, 424) that receives an envelope signal corresponding to the modulated IF signal and that produces a time delayed envelope signal based upon a time delay control signal (see Col. 6, lines 44-56 and Figure 4. The time delay control signal comes from block 422);

an envelope adjust block (104, 108) that adjusts the modulated RF signal based upon the time delayed envelope signal to produce an envelope adjusted modulated RF signal (see Col. 6, lines 62-67 and Figure 4. The gain of variable gain stage 104 is adjusted by amplifier 424 and the mixer 108 produces an adjusted modulated RF signal); and

a time delay calibration block (422) that receives the envelope adjusted modulated RF signal and that produces the time delay control signal (see Col. 6, lines 57-62 and Figure 4).

As to claim 20, the Walczak reference discloses a method for producing a modulated RF signal having a non-constant envelope, the method comprising:

receiving a modulated baseband signal (see Col. 7, lines 5-7 and Figure 4);

converting the modulated baseband signal to a modulated IF signal having a non-constant envelope (see Col. 7, lines 5-7 and Figure 4);

converting the modulated IF signal to a modulated RF signal having a constant envelope using a translational loop (see Col. 4, line 62 to Col. 5, line 7, Col. 6, lines 62-67, and Figure 4);

receiving an envelope signal corresponding to the modulated IF signal (see Col. 6, lines 44-56 and Figure 4. The time delay control signal comes from block 422);

producing a time delayed envelope signal based upon a time delay control signal (see Col. 6, lines 44-56 and Figure 4. The time delay control signal comes from block 422);

adjusting the modulated RF signal based upon the time delayed envelope signal to produce an envelope adjusted modulated RF signal that has a non-constant envelope (see Col. 6, lines 62-67 and Figure 4. The gain of variable gain stage 104 is adjusted by amplifier 424 and the mixer 108 produces an adjusted modulated RF signal); and

producing the time delay control signal based upon the envelope adjusted modulated RF signal (see Col. 6, lines 57-62 and Figure 4).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 4, 13, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,193,223 to Walczak et al. in view of Schwent et al. (U.S. Patent 6,539,235).

As to claims 4, 13, and 22, the Walczak reference discloses the RF transmitter of claim 1, the wireless device of claim 11, and the method of claim 20. However, it does not disclose the time delay calibration block: determines a channel power corresponding to the RF signal; determines an alternate channel power corresponding to an alternate channel or an adjacent channel; and determines the time delay control signal based upon a ratio of the channel power and the alternate channel power or adjacent channel power. The Schwent teaches the time delay

calibration block: determines a channel power corresponding to the RF signal (see Col. 4, lines 14-26); determines an alternate channel power corresponding to an alternate channel or an adjacent channel (see Col. 4, lines 14-26); and determines the time delay control signal based upon a ratio of the channel power and the alternate channel power or adjacent channel power (see Col. 4, lines 14-40 and Col. 1, lines 34-40).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmitter, device, and method of Walczak wherein the time delay calibration block: determines a channel power corresponding to the RF signal; determines an alternate channel power corresponding to an alternate channel or an adjacent channel; and determines the time delay control signal based upon a ratio of the channel power and the alternate channel power or adjacent channel power, as taught by Schwent, in order to hold the power amplifier at the limits of linearity and extract the maximum efficiency from the power amplifier under changing operating conditions.

5. Claims 6, 8, 15, 17, 23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,193,223 to Walczak et al. in view of Rishi (U.S. Patent 6,717,980).

As to claims 6, 15, and 23, the Walczak reference discloses the RF transmitter of claim 5, the wireless device of claim 14, and the method of claim 20. However, it does not disclose the envelope detection block determines the envelope signal based upon the modulated baseband signal. The Rishi reference teaches the envelope detection block determines the envelope signal based upon the modulated baseband signal (see Col. 7, lines 18-23).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmitter, device, and method of Walczak wherein the

envelope detection block determines the envelope signal based upon the modulated baseband signal, as taught by Rishi, in order to reduce cross modulation noise in transceivers or transmitters.

As to claims 8, 17, and 25, the Walczak reference discloses the RF transmitter of claim 5, the wireless device of claim 14, and the method of claim 20. However, it does not disclose the envelope detection block receives the envelope signal from a coupled baseband processor. The Rishi reference teaches disclose the envelope detection block receives the envelope signal from a coupled baseband processor (see Col. 5, lines 35-39).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmitter, device, and method of Walczak wherein the envelope detection block receives the envelope signal from a coupled baseband processor, as taught by Rishi, in order to reduce cross modulation noise in transceivers or transmitters.

6. Claims 10 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,193,223 to Walczak et al. in view of Eidson et al. (U.S. Patent 6,255,906).

As to claims 10 and 19, the Walczak reference discloses the RF transmitter of claim 9 and the wireless device of claim 18. However, it does not disclose the envelope time delay adjust block comprises: a time delay block that delays the digital envelope signal by a delay that is based upon the time delay control signal; and a digital to analog converter that receives the output of the time delay block and that produces the time delayed envelope signal. The Eidson reference teaches the envelope time delay adjust block comprises: a time delay block that delays the digital envelope signal by a delay that is based upon the time delay control signal (time delay compensation circuitry 336 as "time delay block" in Col. 6, lines 20-31, Col. 8, lines 35-41, and

Figure 3); and a digital to analog converter that receives the output of the time delay block and that produces the time delayed envelope signal (digital to analog converter (DAC) circuitry 347 in Col. 8, lines 35-41 and Figure 3).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmitter and device of Walczak wherein the envelope time delay adjust block comprises: a time delay block that delays the digital envelope signal by a delay that is based upon the time delay control signal; and a digital to analog converter that receives the output of the time delay block and that produces the time delayed envelope signal, as taught by Eidson, in order to compensate for time delay mismatches that occur when the propagation paths for the envelope and FM components of the input signal traverse different electrical lengths.

Allowable Subject Matter

7. Claims 2, 3, 12, and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claims 2 and 12, the prior art of record fails to show or fairly suggest a time delay calibration block comprises a level detector and control block that receives the LPF output and the BPF output and that produces the time delay control signal based upon the LPF output and the BPF output, in combination with other features cited in the claims.

As to claim 3, it is dependent on claim 2.

As to claim 21, the prior art of record fails to teach or fairly suggest a method comprises determining the time delay control signal based upon the ratio of the band pass filtered output to the low pass filtered output, in combination with other steps cited in the claim.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Staudinger et al. (U.S. Patent 6,049,703) discloses amplifier circuit and method for increasing linearity of the amplifier circuit.

b. Francos et al. (U.S. Patent Application Publication 2003/0072388 A1) discloses time delay estimation in a transmitter.

c. Griffith et al. (U.S. Patent 6,078,628) discloses non-linear constant envelope modulator and transmit architecture.

d. McCune et al. (U.S. Patent 6,366,177) discloses high-efficiency power modulators.

e. Shibata (U.S. Patent 5,697,072) discloses transmission signal level control device for radio transmitter.

f. Alberth, Jr. et al. (U.S. Patent 6,349,216) discloses load envelope following amplifier system.

g. Della Torre et al. (U.S. Patent 6,658,065) discloses system of and method for reducing or eliminating the unwanted sideband in the output of a transmitter comprising a quadrature modulator followed by a translational loop.

h. Haapoja (U.S. Patent Application Publication 2003/0045250 A1) discloses method and apparatus for detecting power levels of varying envelope signals.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duy K Le whose telephone number is 703-305-5660. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F Urban can be reached on 703-305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Duy Le
August 20, 2004

Quochien B. Vuong 8/21/04

QUOCHIEN B. VUONG
PRIMARY EXAMINER